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Articulating Governance Mechanisms for Collective Learning

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Abstract

This paper seeks to shed light on the role that governance mechanisms at play within the firm have in organizational learning. Moreover, since different governance mechanisms co-exist within an organization, their alignments are of particular importance for achieving knowledge circulation within the organization. We here focus on knowing communities, seen as important locus for knowledge creation, and explore how the organization can take advantage of their cognitive activities. We argue in particular that such coordination can be realized at the governance level: formal rules set by the management provides a framework that can yoke the different norms sets followed by communities. Our proposals are confronted to a case study carried out in a large public organization.

1. Introduction

One intriguing question concerning organizations is how they manage to reconcile continuity and change. Indeed, organizations continuously adapt to changes in their environment, introduces novelty in their products and processes, while at the same time keeping their identity over time.

Important works in the realm of organizational learning, such as those of Argyris and Schön (1978) or Nonaka and Takeuchi (1995), accounted for the dynamics of organization. However, these contributions acknowledged mostly two ontological levels for learning, the individual and collective ones. In recent years, the idea that organizations should be seen as made of different social groups gained strength (Brown and Duguid, 1991; Wenger, 1998; Nooteboom, 2006). In this view, organizations are made of various social groups (functional divisions, communities, project groups, etc.), each of them having an idiosyncratic functioning and, hence, specific knowledge production mode. Knowledge so produced is in turn highly contextual and present a high level of stickiness. In other words, a great deal of knowledge cannot be fully understood outside the social structure that gave it birth.

The vision of the organization as an ensemble of subgroups having idiosyncratic behaviors raises new questions. First, one has to understand the internal dynamics of these groups, and second, one has to explain the interactions between these groups. The issue of organizations' continuity and change becomes one of coordinating learning processes carried out by a variety of stakeholders. In this analysis, we take the view that three related aspects have to be considered to address collective learning dynamics (Bogenrieder and Nooteboom, 2004). The first is the type of knowledge and learning modes. The second is the structural aspect of social relations. The last one on which we shall focus is the governance mechanisms ensuring the collective activity. This epistemological position implies to view knowledge as highly contextual, both socially and physically.

We consider that one important aspect of social structures, with respect to knowledge production and use are the governance mechanisms set by or emerging among the members of

social groups. By governance mechanisms, we mean all these mechanisms that protect relationships and ensure the functioning of the group (Bogenrieder and Noteboom, 2004).

The question we investigate here is how the different governance mechanisms at play in one organization are aligned in order to achieve knowledge circulation and learning at the organizational level. We will begin by defining and précising what we mean by governance mechanisms. In a second section, we will focus on specific groups, knowing communities that are key elements in organizational learning. We will then turn to the issue of coordinating these various communities in an organization. Our proposals will then be tested against a case study carried out in a large French public organization. A discussion will draw some practical consequences for management.

2. Governance mechanisms

Learning is viewed as interactions with the physical and social world. These processes take place in different social structures adapted to the kind of learning that takes place (e.g. more or less complex). However, this picture is not complete enough for fully accounting for collective learning mechanisms. Indeed, so far, we have no explanation for the existence and lasting of ties, for the coordination of collective endeavors or for the establishment of common objectives.

To yoke the different individual efforts toward a common end, actors adopt governance mechanisms. Following Bogenrieder and Noteboom (2004), we define here governance as the ways by which relational risks are reduced that is all the means that are set in order to avoid the social group to fall apart. Governance mechanisms come in numerous forms and shapes, and different governance mechanisms can co-exist in one single organization. Depending on the kind of learning activity and the type of social structure sustaining it, one kind of mechanism may be preferred. It is essential to note that these governance mechanisms are complement but not substitute. What some of them permit to achieve cannot be carried out by using others. A key question in organization learning is thus how to align these various governance mechanisms.

Drawing upon Ouchi's (1980) work, one can sketch a typology of the various governance mechanisms. When learning processes at stake are rather simple, consisting mainly in seeking complementary information and adapting marginally the existing knowledge then simple and flexible governance mechanisms may suffice. This can be for instance price mechanisms, between two business units in a large corporation. If one needs more complicated learning, involving the articulation of various bodies of knowledge, then hierarchy and formal authority can be used. This is a classical argument in the transaction costs theory (Williamson, 1975) for the existence of firms. For transaction costs theory, complex economic activities cannot be coordinated through market because the uncertainty attached to these activities is too high. Hierarchical structures and formal incentive mechanisms then appear to be relevant governance structures to ensure the alignment of the efforts of heterogeneous agents. Formal governance mechanisms are well fit for articulating already well constituted bodies of knowledge in a relatively stable framework. However, hierarchical structures and formal contracts are still too rigid to deal with learning processes that are really complex due to their high situatedness, to the degree of interaction they require and to the specificity of knowledge at stake. In this latter case, hierarchical governance does not suffice. Agents need norms, understood as governance means tightly coupled with the practice considered, for

coordinating their cognitive activities. In the next section, we turn to this specific but important case.

3. Knowing communities

Since Lave and Wenger (1991) seminal book introducing the concept of community of practice, there is a now consequent body of literature claiming that an important part of learning processes in organizations actually takes place within knowing communities. We use the umbrella term knowing communities to designate all the communities oriented toward cognitive activities (Cowan *et al.*, 2000; Lynn *et al.*, 1996; Lave and Wenger, 1991; Wenger, 1998; Brown and Duguid, 1991; 1998). However, as communities, they all share the same functioning principles.

3.1. Norms in knowing communities

Knowing communities have several distinctive features that we briefly summarize here (Cohendet and Amin, 2005). Knowing communities can be defined as informal groups (that must be distinguished from formal modes such as functional groups or project teams) of members characterized by the following properties: 1) members behavior is characterized by a volunteer commitment in the building and sharing of a repertory of cognitive resources; 2) Through their practice and repeated exchanges, community members progressively build a shared identity; 3) what bind together community members is the respect of commonly accepted social norms.

Communities emerge in a self-organized manner, out of the repeated interactions of members around an activity. Agents in a community coordinate themselves by agreeing on a set of norms that progressively emerge out of these interactions. Norms are here defined as informal social regularities that individuals feel obligated to follow because of a fear of external non legal sanctions (McAdams, 1997). When facing unexpected events, community members behave according to community's norms rather than contractual schemes. Moreover, repetitive nature of interactions considerably reduces opportunistic behavior (e.g. moral hazard), that are replaced by norms of cooperation (Bowles and Gintis, 2000).

One can distinguish self-enforced and socially-enforced norms (Grandori, 2006). A self enforced norm is followed because of selfish considerations, i.e. an agent increases his/her welfare by following the norm. A socially-enforced norm is followed by agents because they incur social punishment by their peers if they deviate. In communities, norms are usually of the second type (Bowles and Gintis, 2002). A norm is a highly internalized, socially embedded, and often tacit guide of behavior that all agents agree to follow and that orient the endeavor of the group. Norms and activity are distinct but closely coupled.

However, different communities have different and (often) largely incompatible sets of norms. Moreover, knowledge produced in communities is situated and fully understandable only by agents following the norms that enabled its production. In order to understand and be able to use some piece of knowledge, one has to share to some extent the norms that helped in creating it. This raises the question of how to drain this specific knowledge and diffuse it throughout the organization.

3.2. The difficulty of articulating knowing communities

The fact that communities are governed following internal social norms has a necessary corollary, namely that people are willing to enforce these norms and make sure that there is no shirking or free-riding (Bowles and Gintis, 2002). Together, social norms and the strong willingness to see them applied entail the risk of closure and parochialism for communities, the development of an 'us against them' vision of the world. This tendency toward closure renders difficult the articulation of communities with the rest of the organization, and in particular other communities.

To solve this issue, one often proposed solution (Wenger, 1998; Brown and Duguid, 1998) is that some actors may play the role of brokering knowledge between different communities. In the view of the authors proposing this solution, the bridging actor is able to understand the different representations of the world and the norms underlying them and acts as a translator between the social groups. We are here close to the notion of the agent spanning a structural hole (Burt, 1992) and able to transmit the information from one sub-network to another.

However, two studies highlight the fact that this solution does not operate in every situation. Krackhardt (1999) and Bogenrieder and Van Baalen (2004) both report failures of attempts to articulate different social groups obeying to internal social norms. Both studies concluded that bridging two distinct groups was impossible because the norms sets of these groups were mutually exclusive. In this situation, the agents bridging the different social groups have to comply to the different norms sets. Since these norms sets are mutually exclusive, the only room for action for the bridging agents is the intersection between the different norms sets. This room is so reduced that no action can be taken that do not hurt one or the other norms set. This situation occurs (by opposition to what Burt describes) because the behavior and intention of the bridging agents are known by all participating actors: when bridging actor's behavior is under scrutiny of the other agents, s/he cannot act in a way that would offend one of the norms sets s/he is supposed to follow (Padgett and Ansell, 1993; Krackhardt, 1999; Bogenrieder and Van Baalen, 2004).

Another widely held proposition is that through continuous interactions, the different social groups existing within an organization develop either a shared knowledge (Boland and Tenkasi, 1995; Bechky, 2003; Kellogg *et al.*, 2006) or a common knowledge (Carlile, 2004). In this view, the different social groups are seen as perceiving the necessity to make their representations of the world understandable by others. Social groups and communities thus develop emitte and absorptive capacities in order to be able to communicate with one another (Szulanski, 1996). In some situations, to render this communication process more efficient, they develop common cognitive spaces, sometimes around boundary objects, in which agents from different social backgrounds may interact (Bechky, 2003). These theoretical developments assume that agents are interested in sharing knowledge and that the organizational context is favorable to such practices. However, not all organizations develop such a culture of sharing, nor all the communities see an interest in diffusing or acquiring knowledge from its direct social environment. This remark is of particular relevance for organizations that, unlike the one studied by Kellogg *et al.* (2006), for instance, cannot be seen as communities of communities but contain significant hierarchical parts.

Thus, in certain situations likely to be common in organizations, the articulation of various learning processes carried out by communities following specific norms cannot be articulated by relying solely on social structures or on cognitive processes. We propose in the following section that to understand alignments of learning mechanisms, not only should we consider the cognitive and social dimensions, but also the governance one.

4. Interplay between governance mechanisms

4.1. Hierarchical structures and rules

Rules are important forms of governance mechanisms. They are the most visible and are often seen as the principal means of coordination of activities in an organization (March and Simon, 1958). Besides, as Reynaud (2005) stresses, rules are the backbone of organizations, the elements that ensure the permanency and robustness of structures. Whereas norms depends on communities and may disappear with these latter (Gongla and Rizzuto, 2001), rules are set to address situations that are seen as likely to last over long period of time.

Rules are implemented and enforced by hierarchical structures or formal institutions. Rules sets are characterized by a thoroughly designed structure and a specialization according to the various competencies needed by the organization. If some norms may exist within hierarchical structures, the main coordination mechanism remains the rule.

Rules have two important features. First, they are general in scope and span, and second, they are incomplete (Reynaud, 2005). Rules are general by construction, given the function they are intended to fulfill. Whenever an organization creates a rule, the aim is to provide a guideline for a broad class of activity. A rule can thus not be attached to a specific situation or context and seek to grasp the abstract features characterizing this set of practices. As coordination means, rules should be followed by the largest possible number of agents, without considering their particular positioning in the organizational chart.

Moreover, rules are explicit and codified pieces of knowledge. This is necessary to span over large parts of the organization but also to be enforceable. Only a situation explicitly stated can be assessed, arbitrate, judged by a formal authority (Grandori, 2006). This necessity for codification implies to consider organizational functioning at an abstract and general level. Specific, contextual activities entail too large a part of tacit knowledge or knowing to be completely describable and objectified. Hence, because of their codified nature, rules have to remain at a general level.

In reason of their general nature, rules are incomplete. More precisely, rules actually are complete at the general level at which they are stated. However, they are incomplete when they are to be enacted in a concrete work situation. To solve a concrete problem, there are always contextual elements, implementation details that have not been foreseen in the rule formulation. Agents thus have to interpret this missing part of rules in the accomplishment of their daily activities (Reynaud, 2005). There is always a distance between the rule and the actual solution to the problem it addresses.

Rules enforced by hierarchical structures are usually not very well fit in terms of learning objectives. Because of their distance to real work situations, they are of little help in carrying out complex knowledge creation processes. Although hierarchical structures and rules are not dedicated to learning, they can nonetheless play a very important role in organizational learning. Indeed, these structures help in ensuring the alignment and the coordination of the various social groups existing within the firm, a function that norms cannot fulfill. Norms and rules must then be seen as complementary rather than substitute (Bowles and Gintis, 2000).

4.2. Interplay between rules and norms

In organizations, rules and norms (among other governance mechanisms) co-exist and are articulated. This articulation is possible because of the difference in distance to activity between norms and rules. Since rules are remote from concrete practice, they live room for the development of norms. Rules provide an overall framework in interstices of which norms can take place. The interplay between rules and norms offers several advantages in terms of coordination.

Governance mechanisms are not cognitive in nature. However, they play an important part in guiding learning processes. Guiding the relationships in a community of agents, norms play a clear role in guiding learning activities, by shaping the structure and content of interactions. Since rules frame norms development, rules also act at a second order level as a guide for learning (Nooteboom, 2006). In addition, the content of rules may provide insights and cognitive materials that can be used in knowledge development (Weick, 1998).

A particular norms set and a rules system can be articulated with one another. However, rules also play an important role in bridging different norms sets. Rules are objectified, and mostly disembodied from any social milieu, remote from the practice, enforced by a third-party authority, and spanning over the whole organization. These characteristics permit the rules to act as interfaces between sets of norms. They play at the governance level the same role as boundary objects play at the cognitive one (Leigh-Star and Griesemer, 1989). Rules systems act as interface between norms sets to ease the sharing of knowledge. They allow for a smooth interweaving of sets of norms. Because rules are remote from practice, several instantiation of the rules can be made, depending on the practice considered. Norms can then fit in the interpretations given to the rules. Conversely, since rules are objectified and codified, they are robust enough to ensure the convergence of the various norms existing within the organization.

5. Articulating governance mechanisms in French regional council

5.1 Research context and method

One of the authors carried out the implementation of an Information System in a large French public organization. The aim of the implementation of the system was to move from a classical bureaucratic structure to a more flexible structure that would fully take into account the existence of communities within it. One of the authors was the project manager, and the case study reported here stems directly from his experience. The data gathering methodology adopted here is thus action-research. The author has been actively involved in the project and interacted on a daily basis with the different protagonists. As such, he had a unique point of view on the unfolding of the project, the role played by the various actors and the organizational changes entailed.

5.2 General presentation

In recent years, national French politics have been oriented toward decentralization. A direct consequence is that local administrations have been asked to be closer to their citizens. These latter live in different contexts (e.g. rural or urban) and have different needs. Local administrations are asked to provide services closely adapted to the very different needs expressed. To fit these new missions, the regional council we studied reached the idea that it was necessary to render its structure more flexible. To achieve this organizational project, the

public organization decided to re-design its hierarchical structure and promote transverse practices. The overall objectives was, on the one hand, to develop local, highly specialized knowledge on a specific territory and, on the other, to create a pool of competencies that could be shared by different functions.

The top management became aware of the new stakes associated with the organization's functions and the necessity to leverage competencies associated with territories management and the typology of citizens. To address this challenge, two major axes were developed; an information system has been set and transversal practices relying on knowing communities have been encouraged.

5.3 Communities in the regional council

The top management distinguishes two kinds of communities. Operation-focused communities have for objectives to develop and maintain knowledge about a specific professional domain. For instance, one of them has been built around questions about public markets, and another reflects on the function of direction assistant. Thematic-focused communities reflect on transversal topics, such as issues revolving around the reception of citizens wishing to contact the regional council. The remaining of this paragraph draws upon observations made upon these three examples.

Operation-oriented communities are thus more concerned with the iterative enhancement and maintenance of an existing body of knowledge. These communities develop a feeling of expertise. In participating in communities' activities, members perceived that the knowledge they possessed were critical and valuable for the organization. Operation-oriented communities can be said to be rather exploitation oriented.

Thematic-focused communities are seeking to develop new insights and representations of the world. By focusing on a general theme disconnected from any local practices, thematic communities tend to develop knowledge that did not previously exist within the organization. Their aim is to think of and model new processes. As such, these communities are rather exploration oriented in that they enter unknown knowledge spaces.

All communities are transverse to the organization, and their members can come from any hierarchical level and any function. They have in common to be managed by their members, without intervention from the hierarchy. They do not support any constraints in terms of time, costs or any other kind of organizational requirements. In all cases, one observed the emergence of a sense of belonging, and a shared identity. Moreover, each of these communities has developed an internal dynamic that resulted in cognitive productions and reframing of their environment.

A notable exception is the community of direction assistant that, unlike the others, did not spontaneously emerged but has been initiated by the human resources direction. In this case, the community benefited from strong support from the hierarchy at its origins. Though it now functions in a totally independent way, it has been launched by the hierarchy that lent it significant sponsorship for its formation and recognition at a global level.

Key characteristics of the two kinds of communities are summarized in the table below.

	Operations-focused	Thematic-focused
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	communities	communities
Examples	Community of direction assistants Community of specialists of public market	Community for the enhancement of citizens reception practices
Commitment	Competencies, functions	A theme of reflection
Motivation	Initiative of one or several actors Fostered by hierarchy An event	Initiative of one or several actors An event
Recruitment rules	Cooptation	Cooptation
Functioning modes	Iteratively	Build representation of the world
Cognitive activities	Exploitation	Exploration
Production	New procedures, evolution of the function	Recommendations, new processes' model
Signaling toward the institution	Possibility to edit a public view on the intranet	Possibility to edit a public view on the intranet
Life cycle	Depends on members' commitment	Depends on the level of satisfaction with the answer given to the initial thematic

5.4 Interactions between formal organization and communities

Although the hierarchy does not intervene in communities' life, they nonetheless provide a framework within which communities are to evolve. The organization's hierarchy came to the conclusion that three conditions have to be fulfilled for a community to function. First, a need for the creation of a community must be felt. A practice, or a problematic must be identified by some actors as critical and they must be willing to build knowledge about it. Second, objectives expressed by the community must be to some extent convergent with the ones of the organization. The aims of communities have to be aligned with the overall strategy; otherwise the antagonisms would be such that the community could not exist. Third, the community has to develop a real collective dynamic. This dynamic propel the community itself and should feed the organization with new ideas and insights.

This interweaving of hierarchical structures and communities has been made along several lines. First, the hierarchy provides a favourable context for communities' emergence, through the implementation of information and communication technologies. An intranet and a knowledge portal have been created. This technological platform includes tools for the coordination of contributions (workflows), tools for knowledge sharing and capitalizing, as well as online information regarding the various activities of the regional council. Agents can thus create virtual spaces associated with different management devices that will help them in developing communitarian activities.

The technological platform embodied the rules directing the interactions between communities and hierarchy. The coordination means gained visibility and hardness by being codified in ICT. The technology is then the tool permitting to promote a new internal structure wherein communities and hierarchical departments are articulated with one another.

Second, a certain number of additional rules have been set to ensure the smooth functioning and management of the platform. First, prior to the creation of a community, it is asked to the potential founder to provide a brief description of the topics intended to be addressed. Second,

within each pole, a coordinator has been nominated. This actor is in charge of promoting, animating and regulating the collaborative spaces in his/her pole. Transversal spaces are animated by a service linked to the human resources direction. These are these referents that allow for the creation of a communitarian space and handle the technical aspects of the creation of the virtual space. Once this is done, communities are free in terms of functioning and type of production. Communitarian spaces are thus framed by a certain number of rules, but within this space, total freedom is left to communities' members.

There is however an important side effect to the acknowledgement by the hierarchy of what was previously an informal and hidden social group. The official recognition of the community increased the sense of belonging of members. They develop a collective identity and the group became more cohesive and willing to affirm its identity toward the rest of the organization. Direction assistants advanced the argument that the community was of a consequent size, and as such should be more integrated in the operational decisions. In other words, as the community becomes official, it entered the power games of the organization.

The platform also provides possibilities for capitalizing and displaying its production to the rest of the organization. The intranet is thought to be a means by which communities feed the organization with new knowledge and insights. From the management point of view, communities are new sources of internal performance that have to be integrated in the institutional context. However, productions release is not mandatory and left to the community's appreciation. Communities' outputs are delivered in a standardized form imposed by tools. Though communities are self-organized and free to produce knowledge following their own path, the hierarchy makes sure by the definition of interfaces that communities' production will be understandable by anyone in the organization. The knowledge so produced can then be reused in various settings, from strategy elaboration or competence management to concrete operational conduct of business. These new knowledge and representations of the world entail modifications in the perception of different functions and processes. Communities' activity thus yields to definition or revision of rules applied in the hierarchical structure.

6. Discussion

6.1 The nature of rules

In the organization presented above, communities are loosely coupled and heterogeneous. In such situation, as Carlile (2004) argues, existing understandings of boundary spanning relying on social structures or cognitive considerations do not apply.

Because communities are rare and disconnected from one another, coordination and communication between communities can only be achieved through the implementation of a set of rules. Communities remain self-organized, and their modes of recruitment, the choice of their functioning modes, and the definition of their object of activity are all made according to internal norms. We did not observe any explicit hierarchy or roles definition in communities. The organization can be seen as hybrid, where norms and rules are articulated.

However, formal coordination is reported as having contradictory effects on knowledge creation and circulation within firms. On the one hand, Tsai, for instance, in a study on the impact of hierarchical coordination on knowledge sharing within organization reports that strong centralized coordination structure impedes knowledge flow within the organization

(Tsai, 2002). On the other hand, Un and Cuervo-Cazurra (2004) shows that formal coordination may contribute to firms development of knowledge. The question is then why rules do not systematically thwart knowledge creation endeavor. The answer can be found in the nature of rules instantiated. In the case studied here, rules are procedural rather than substantive, that is they focus on the context of activity rather than on the activity itself (Grandori, 2006). Grandori (2006) proposes two kinds of procedural rules, process-based governance, and resource-based governance. Process-based governance highlights situations in which what is governed are the relationships between actors rather than the exact content of the activity. The resource-based governance refers to the fact that allocation of resources will be made independently of unforeseen contingencies that might occur. In both cases, the different parties accept the uncertainty attached to any innovation process and leave a high degree of freedom in the way agents will handle these activities.

The use of substantive rules by the organization allows for the development of entities obeying different governance logics in it. Moreover, not only communities are loosely coupled with one another, but they are also loosely coupled with the hierarchy (Weick, 1982). In fact, one observes different degree of coupling, the community of direction assistants being relatively more tightly linked to the hierarchy than the other communities. The ability to maintain loosely coupled elements and to modulate up to a certain degree the strength of linkages between these elements and the rest of the organization is afforded by the procedural nature of rules. As Weick (1982) stresses, loosely coupled system needs not to be a vulnerable system. When rules provide a heedful context, they can provide shelter for different forms of collaboration and be articulated in different ways with other governance mechanisms.

6.2 Organizational Learning

The case shows that communities at the regional council are of two sorts: operation-focused communities and thematic-focused communities. The formers relate to the notion of community of practice (Brown and Duguid, 1991), while the latter could be labeled epistemic communities (Cowan *et al.*, 2000). As Nooteboom (2006) argues, communities of practice are exploitation-oriented, whereas epistemic communities are exploration-oriented. However, while Nooteboom accounts for the interaction between the two kinds of communities by calling organizational culture into play, we more simply take the view that a set of formal rules acts as the coordination mechanisms bridging the different learning mechanisms.

This point of view raises the question of the role of the manager in the organizational learning processes, since s/he is the actor that implements and controls the rules. Burgelman (1983) proposes a dynamic model in which overall firm's strategy is informed by emergent, dynamic behaviors taking place in the organization. In turn, the global corporate strategy frames the autonomous strategic behavior taking place in the structure. As a result, one of the main roles of managers is to create a favorable context in which creative actions could take place (Ghoshal and Bartlett, 1994). Considerations on rules permit to precise the mechanisms by which this is possible. As Tsoukas and Chia (2002) state, managers are the actors that "voice" the new rules. Managers assess the new knowledge produced and practices sustained by the different norms sets (or communities). If these knowledge and practices are deemed useful for the organization, managers will edict rules that will institutionalize these cognitive products and their conditions of production.

Managers play an important role in making sense of newness introduced by communities and in incorporating this novelty in formal rules. However, as stressed by Burgelman (1983), rules

also constrained the cognitive outputs that norms sets can produce. Rules bind the cognitive distances between communities and define a development zone for communities. As a result, changes are made following a path, and this path dependency ensures continuity for the organization (Zhou, 1983).

7. Conclusion

The main conclusion that can be drawn from the case is two-fold. First, by disentangling the cognitive, social, and governance dimensions of collective learning, we have been able to focus on governance role in organizational learning. Of course, all dimensions play a part in knowledge creation, but studying separately each dimensions provide new insights. Second, the role of rules as a driver for organizational learning has been highlighted. Under some conditions, and in particular when rules are procedural, they can play a significant role in aligning local learning and in allowing for change while ensuring the overall integrity of the organization.

Several questions remained out of the scope of this study and deserve further investigations. First, power relationships between different subgroups have only be slightly addressed in this study as it focused on cognitive issues. Nonetheless, the way organization will deal with these problems is certainly of crucial importance, especially if communities continue to be seen by firms as a lever for knowledge management. Second, the arguments we presented do not fully satisfactorily address the problem of the boundary of the organization. One line of reasoning would be to state that the organization extends up to the point at which the various governance mechanisms can no longer be articulated. This, nonetheless, needs to be seriously tackled.

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